

SPECIFICATIONS 45563
and
BIDDING DOCUMENTS
for
TURBINE PERFORMANCE TESTING

Return to Purchasing by March 15, 2002

Buyer: Leslie B. Lovell

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PART A - DIVISION A1**NOTICE INVITING PROPOSALS**

The Intermountain Power Service Corporation (IPSC) invites sealed bids for furnishing instrumentation, equipment, and labor and performing **Turbine Performance Testing** in accordance with **Specifications 45563**, available in the Purchasing Section, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546.

Proposals shall be submitted on IPSC's bidding forms. All Proposals shall be filed with the Buyer at the above address on or before **Friday, March 15, 2002**.

Proposals shall be subject to acceptance within, and irrevocable for, a period of thirty (30) calendar days after date of bid opening.

The right is reserved to reject any and all Proposals.

In the performance of any Contract awarded, the bidder shall not discriminate in employment practices against any employee or applicant for employment because of race, religion, national origin, ancestry, sex, age, or physical disability.

Dated: March 12, 2002

Leslie B. Lovell
Buyer

DIVISION B1

INSTRUCTIONS TO BIDDERS

PART B - DIVISION B1**INSTRUCTIONS TO BIDDERS**

1. **Form, Signature, and Delivery of the Proposals:** The bidder's Proposal shall be made on the yellow copy of the Bidding Documents. The specifications printed on white paper shall be retained by the bidder.

The bidder's name, address, and the date shall be stated in the Proposal. The Proposal shall be signed by the person authorized to bind the bidder.

The Proposal shall be enclosed in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the bidder. The envelope shall bear the words "Proposal for," followed by the specifications number, the title of the specifications, and the date of bid opening.

If the Proposal is mailed, it shall be addressed as follows:

Purchasing Section
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624-9546

If the Proposal is sent by messenger, it shall be delivered to the Administration Building, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT.

2. **Interpretations and Addenda:** Should a bidder find discrepancies or omissions in the plans, specifications, or other documents, or should there be doubt as to their true meaning, the bidder shall submit to the Buyer a written request for an interpretation or clarification thereof. A request for addenda, interpretation, or clarification shall be delivered to the Buyer marked "Request for Interpretation" and must be received by the Buyer in time to permit a reasonable response before date of bid opening. Any interpretation of, or change in the documents will be made only by addendum issued to each person to whom specifications have been issued and will become a part of any contract awarded. IPSC will not be responsible for any other explanations or interpretations.
3. **Correspondence:** All inquiries or correspondence to IPSC prior to award of the Contract shall be addressed to the Buyer.
4. **Changes or Alternatives:** The bidder shall not change any wording in the documents. Any explanations or alternatives offered shall be submitted in a letter attached to the

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DIVISION B1

INSTRUCTIONS TO BIDDERS

front of the Bidding Documents. Alternatives which do not substantially comply with IPSC's specifications cannot be considered. Language of negation or limitation of any rights, remedies, or warranties provided by law will not be considered part of the Proposal. Bids offered subject to conditions or limitations may be rejected.

5. **Specified Materials or Equivalent:** Whenever any particular material or process is specified by a patent or proprietary name, by a trade or brand name, or by the name of a manufacturer, such wording is used for the purpose of describing the material or process, fixing the standard of quality required, and shall be deemed to be followed by the words "or equivalent." The bidder may offer any material or process which shall be the equivalent of that so specified.
6. **Language:** Everything submitted by the bidder shall be written in the English language.
7. **Sales or Use Taxes:** Prices quoted by the bidder shall not include any applicable sales or use taxes or Federal Excise Taxes.
8. **Duties:** Prices quoted by the bidder shall include all applicable duties.
9. **Award of Contract:** Any award of Contract will be made to the lowest and best, regular responsible bidder. The determination as to which is the lowest and best, regular responsible bidder may be made on the basis of the lowest ultimate cost of the materials or equipment in place and use. The right is reserved to reject any or all Proposals.
10. **Comparison of Bids:** For the purpose of comparing bids, it will be assumed that **Turbine Performance Testing** will be performed on two (2) turbines.

PART B - DIVISION B2**SUPPLEMENTARY INSTRUCTIONS TO BIDDERS**

1. **Schedule:** Testing for IGS Unit 2 shall be completed by May 31, 2002 (eight weeks after startup) and for IGS Unit 1 by May 30, 2003. This is an HP Turbine contractual requirement.
 - a. Target test setup period is the week immediately following startup of the unit (startup for Unit 2 is targeted March 31, 2002), but could begin as soon as the last week of the Outage. Test electrical measurement equipment must be installed with the unit off-line, therefore must be shipped in advance and received by March 25, 2002.
 - b. **Schedule Summary:** IGS Unit 2

Performance Testing:	April 8 - 13, 2002
Test Set-up (during Unit 2 shutdown):	April 1 - 6, 2002
HP Turbine Enthalpy Drop (30-day follow-up):	May 7 - 9, 2002

(HP Turbine contractual requirement, only if station instrumentation indicates a significant drop in performance.)

Schedule Summary: IGS Unit 1

Performance Testing:	April 7 - 12, 2003
Test Set-up (during Unit 2 shutdown):	March 31 - April 5, 2003
HP Turbine Enthalpy Drop (30-day follow-up):	May 6 - 8, 2003

(HP Turbine contractual requirement, only if station instrumentation indicates a significant drop in performance.)
 - c. **Benchmark Tests:** Benchmark enthalpy drop tests shall be taken periodically with station instrumentation from the time of initial startup of the turbine and the results recorded for reference purposes.
2. **Drawings:** IGS P&IDs shall be provided with test equipment locations marked and identifying locations of station instrumentation. IGS System Arrangement and Layout Drawings are available on request.

PROPOSAL

The undersigned hereby proposes to furnish instrumentation, equipment, and labor and perform **Turbine Performance Testing** at the Intermountain Power Service Corporation in accordance with **Specifications 45563**.

The undersigned agrees, upon the acceptance of this Proposal by IPSC, to provide materials and complete testing as detailed in the documents identified in Part D of said Specifications for furnishing and delivering the items embraced in the accepted Proposal at the prices named in the accompanying Proposal Schedule.

The undersigned declares under penalty of perjury that such Proposal is genuine, and not sham or collusive, nor made in the interest or in behalf of any person or entity not herein named, and that the bidder has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding, and that the bidder has not in any manner sought by collusion to secure for itself an advantage over any other bidder.

I declare under penalty of perjury under the laws of the state of Utah that the foregoing is true and correct.

Date: _____, 20

Bidder:

Address:

—

Signed By:
(Authorized Signature)

Print Name:

Title:

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PART C - DIVISION C2**BIDDING DOCUMENTS - PROPOSAL SCHEDULE**

Proposal is hereby made to furnish instrumentation, equipment, and labor and perform
Turbine

Performance Testing. F.O.B. IPSC Turbine Deck in accordance with Specifications 45563,
as follows:

1. Unit 2 Firm Price \$
2. Unit 1 Firm Price \$
3. Additional work to be performed at rates submitted on Attachment I.

Prices: The price or prices shall be firm, and shall include all costs to perform testing, including, but not limited to, instrumentation, equipment, labor, mobilization, demobilization, travel, and living expenses.

Cash Terms: A discount for prompt payment is offered of _____ percent for Contract payments made within _____ calendar days after date of acceptance or delivery and receipt of invoice.

Taxes: The foregoing quoted prices are exclusive of all applicable sales and use taxes.

Form of Business Organization: The bidder shall state below the form of its business organization.

Bidder is: _____
(Corporation, Partnership, Limited
Partnership, Individual)

If a partnership, the bidder shall state below the names of the partners. If a corporation, the bidder shall state below the names of the president and of the secretary.

Person to Contact: Should IPSC desire information concerning this Proposal, please contact:

Name: _____ Telephone No: _____

Address: _____

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PART C - DIVISION C3**BIDDING DOCUMENTS - ADDITIONAL BID INFORMATION**

1. Detailed Information: The bidder shall furnish the following detailed information for the work to be performed.
 - a. References: A list of references shall be provided listing previous test experience. This reference list is to include a utility contact name, telephone number, where and when the test was conducted, and test methods used.

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PART D - DIVISION D1**CONTRACT DOCUMENTS**

The documents listed in the Table of Contents, the reference specifications, any documents listed below, and the bidding documents as expressly agreed to by IPSC shall constitute the Contract. Said documents are complementary and require complete and finished work. Anything shown or required of the Contractor in any one or more of said documents shall be as binding as if contained in all of said documents. The Contractor shall not be allowed to take advantage of any error, discrepancy, omission, or ambiguity in any document, but shall immediately report to the Chief Operations Officer, in writing, any such matter discovered. The Chief Operations Officer will then decide or correct the same and the decision will be final.

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PART E - DIVISION E1**GENERAL CONDITIONS**

1. **Definitions:** The following words shall have the following meanings:
 - a. **Bidder:** The person, firm, or corporation adopting and submitting a Proposal under these specifications.
 - b. **Buyer:** The Purchasing Agent for IPSC.
 - c. **Chief Operations Officer:** The President and Chief Operations Officer of IPSC or designated representatives acting within the limits of their authority.
 - d. **Contract Administrator:** The IPSC employee designated by the Chief Operations Officer with primary responsibility for administration of the Contract or designated representatives acting within the limits of their authority.
 - e. **Contractor:** The person, firm, or corporation to whom the Contract is awarded.
 - f. **Directed, Required, Approved, etc.:** The words *directed, required, approved, permitted, ordered, designated, prescribed, instructed, acceptable, accepted, satisfactory*, or similar words shall refer to actions, expressions, and prerogatives of the Contract Administrator unless otherwise expressly stated.
 - g. **Gallon:** Liquid volume of 231 cubic inches at 60 degrees Fahrenheit.
 - h. **IGS:** Intermountain Generating Station located at 850 West Brush Wellman Road, Delta, Ut 84624.
 - i. **IPA:** Intermountain Power Agency, the owner of Intermountain Power Project, and a political subdivision of the state of Utah, organized and existing under the Interlocal Co-operation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended.
 - j. **IPP:** Intermountain Power Project, consisting of Intermountain Generating Station, Intermountain Railcar, Intermountain Converter Station, Adelanto Converter Station, Intermountain AC Switchyard and associated transmission lines, microwave stations, and support facilities.
 - k. **IPSC:** Intermountain Power Service Corporation, a nonprofit corporation, furnishing personnel to support the Operating Agent in the performance of operation and maintenance.
 - l. **Operating Agent:** The city of Los Angeles Department of Water and Power (LADWP) which is responsible for operation and maintenance for IPP.

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- m. **Reference Specifications:** Those bulletins, standards, rules, methods of analysis or tests, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in these specifications. These refer to the latest edition, including amendments published and in effect at the date of the Invitation for Proposal, unless specifically referred to by edition, volume, or date.
 - n. **Subcontractor:** A person, firm, or corporation, other than the Contractor and employees thereof, who supplies labor or materials on a portion of the work.
 - o. **Ton:** The short ton of 2000 pounds.
- 2. **Materials and Work:** All materials and work shall comply with these specifications. All materials and equipment furnished shall be new and unused, but this requirement shall not preclude the use of recycled materials in the manufacturing processes. All work shall be done by qualified workers in a thorough and workmanlike manner. Materials or workmanship not definitely specified, but incidental to and necessary for the work, shall conform to the best commercial practice for the type of work in question.
 - 3. **Nondiscrimination:** The applicable provisions of Executive Order No. 11246 of September 24, 1965, and Bureau of Land Management regulations pertaining to nondiscrimination in employment in the performance of contracts, are incorporated herein by reference, and made a part hereof as if they were fully set forth herein. During the performance of this Contract, the Contractor shall not discriminate in its employment practices against any employee or applicant for employment because of the employee's or applicant's race, religion, national origin, ancestry, sex, age, or physical disability. All subcontracts awarded under any such contract shall contain a like nondiscrimination provision.
 - 4. **Governing Law:** This Contract shall be governed by the substantive laws of the state of Utah, regardless of whether rules on the conflict of laws would cause a court to look to the laws of any other state or laws of any other jurisdiction. Any action, in law or in equity, concerning any alleged breach of or interpretation of this Contract, or concerning any tort in relation to this Contract or incidental to performance under this Contract, shall be filed only in the state or federal courts located in the state of Utah.
 - 5. **Patents and Intellectual Property:** The Contractor shall fully indemnify IPSC, IPA, and the Operating Agent against any and all liability, whatsoever, by reason of any alleged infringement of any intellectual property rights (including, but not limited, to patents,

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copyrights, trademarks, or trade secrets) on any article, process, method, or application used in any designs, plans, or specifications provided under this Agreement or by reason of use by IPSC of any article or material specified by the Contractor.

6. **Contractor's Address and Legal Service:** The address given in the Proposal shall be considered the legal address of the Contractor and shall be changed only by written notice to IPSC. The Contractor shall supply an address to which certified mail can be delivered. The delivery of any communication to the Contractor personally, or to such address, or the depositing in the United States Mail, registered or certified with postage prepaid, addressed to the Contractor at such address, shall constitute a legal service thereof.
7. **Assignment of Contract Prohibited:** The Contractor shall not assign or otherwise attempt to dispose of this Contract, or of any of the monies due or to become due thereunder, unless authorized by the prior written consent of the Chief Operations Officer. No right can be asserted against IPSC, IPA, or the Operating Agent, in law or equity, by reason of any assignment or disposition unless so authorized.

If the Contractor, without such prior written consent, purports to assign or dispose of the Contract or of any interest therein, IPSC, at its option, may terminate the Contract, and IPSC, IPA, and the Operating Agent will be relieved and discharged from any and all liability and obligations to the Contractor, and to any assignee or transferee thereof.

8. **Quality Assurance:** The Contract Administrator has the right, but not the obligation, to subject any or all materials, services, or equipment furnished and delivered under the Contract to rigorous inspection. Before offering any material or equipment for inspection or testing, the Contractor shall eliminate all items which are defective or do not meet the requirements of the specifications. If any items or articles are found not to meet the requirements of the specifications, the lot, or any faulty portion thereof, may be rejected.

Materials or equipment purchased under the Contract will be inspected at IPSC's specified receiving points and there accepted or rejected. Inspection will include all necessary testing for determining compliance with the specifications. The expense of the initial acceptance tests will be borne by IPSC. All expense of subsequent tests will be charged against the Contractor when due to failure of first-offered materials or equipment to comply with the specifications.

The fact that the materials, services, or equipment have or have not been, inspected, tested, or accepted by the Contract Administrator, whether voluntarily or required by any specific provision in this Contract, shall not relieve the Contractor of responsibility in

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case of later discovery of nonconformity, flaws, or defects, whether patent or latent.

9. Extra Work or Changes by IPSC: IPSC reserves the right at any time before final acceptance of the entire work to order the Contractor to perform extra work, furnish extra material or equipment, or to make changes altering, adding to, or deducting from the work, without invalidating the Contract. Changes shall not be binding upon either IPSC or the Contractor unless made in writing in accordance with this Article.

Changes will originate with the Chief Operations Officer who will transmit to the Contractor a written request for a Proposal covering the requested change, setting forth the work in detail, and including any required supplemental plans or specifications. Upon receipt of such request, the Contractor shall promptly submit in writing to the Chief Operations Officer a Proposal offering to perform such change, a request for any required extension of time caused by such change, and an itemized statement of the cost or credit for the proposed change. Failure of the Contractor to include a request for extension of time in the Proposal shall constitute conclusive evidence that such extra work or revisions will entail no delay and that no extension of time will be required.

If the Contractor's Proposal is accepted by IPSC, a written change order will be issued by the Chief Operations Officer stating that the extra work or change is authorized and granting any required adjustments of Contract price and of time of completion.

The performance of extra work or changes pursuant to the change order shall be in accordance with the terms and conditions of these Specifications. No extra work shall be performed or change made unless pursuant to such written change order, and no claim for an addition to the Contract price shall be valid unless so ordered.

Reductions in the scope of work may be made by IPSC without issuing a request for proposal and any notice of reduction shall be effective upon issuance. Reductions ordered by IPSC shall constitute partial terminations and shall reduce the price to be paid by IPSC.

10. Changes at Request of Contractor: Changes may be made to facilitate the work of the Contractor. Such changes may only be made without additional cost to IPSC and without extension of time. Permission for such changes shall be requested in writing by the Contractor to the Chief Operations Officer.
11. Time is of the Essence and Extensions of Time: Contractor shall endeavor to complete delivery within the times and by

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the dates specified. Time for delivery shall not be extended except as provided in this Article.

If the Contractor makes a timely written request in accordance with this Article, the time for delivery will be extended by a period of time equivalent to any delay of the whole work which is: (1) authorized in writing by the Chief Operations Officer, (2) caused solely by IPSC, or (3) due to unforeseeable causes (such as war, strikes, or natural disasters) and which delay is beyond the control and without the fault or negligence of the Contractor and subcontractors.

The Contractor shall promptly notify the Chief Operations Officer in writing at both the beginning and ending of any delay, of its cause, its effect on the whole work, and the extension of time claimed. Failure of the Contractor to provide such written notices and to show such facts shall constitute conclusive evidence that no excusable delay has occurred and that no extension of time is required.

The Chief Operations Officer will ascertain the facts and the extent of the delay and will extend the time for delivery when the findings of fact justify such an extension. The Chief Operations Officer's determination will be final and conclusive.

IPSC will be responsible for extensions of time as herein provided, but will not otherwise be responsible in any manner or to any extent for damage directly or indirectly suffered by the Contractor by any delay.

12. Protests and Claims: If the Contractor considers any demand of the Chief Operations Officer to be outside of the requirements of the Contract, or considers any amount of payment, or any record, ruling, or other act or omission by the Chief Operations Officer to be unreasonable, the Contractor shall promptly deliver to the Chief Operations Officer a written statement of the protest and of the amount of compensation claimed.

Upon written request by the Chief Operations Officer, the Contractor shall provide access to all records containing any evidence relating to the claim or protest.

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Upon review of the protest, claim, and evidence, the Chief Operations Officer will promptly advise the Contractor in writing of the final decision which will be binding on all parties.

The requirements of this Article shall be in addition to, and shall not be construed as waiving, claims provisions of the Government Code of the state of Utah. The Contractor is deemed to have waived and does waive all claims for extensions of time and for compensation in addition to the Contract price except for protests and claims made and determined in accordance with this Article.

13. Limitation of Liability: It is understood and agreed that IPA shall be the party solely liable to the Contractor for payments under this Contract and for any breaches, defaults, or for any torts in the performance of or in relation to this Contract by IPA or the Operating Agent or IPSC or any officers, agents, or employees thereof, and the Contractor hereby expressly covenants and agrees that no suit shall be brought by the Contractor against the Operating Agent or IPSC or their officers, agents, or employees or any of the purchasers of power from IPA with regard to performance under this Agreement, but that all rights or remedies that the Contractor may have or that may arise shall be asserted by the Contractor solely against IPA.
3. Contractor's services will consist of reviewing and advising IPA and IPSC concerning the subject project and/or facilities for which Contractor has no engineering, design, construction, operation or maintenance responsibility. Contractor's review of any information prepared by IPA and IPSC or others, including, but not limited to, design, schedule, interface, environmental, permitting, performance, market or economic information, shall in no way serve to transfer to Contractor responsibility or liability for the accuracy, correctness, or timeliness of such information. Such information shall be timely submitted to Contractor and Contractor's advice will be based on and limited by the accuracy, scope, and timeliness of information furnished to Contractor. Time and scope limitations inherent in Contractor's performance preclude definitive verification of factors, which may later be shown to have been important to the project. Contractor's review, therefore, may not uncover all of the significant risks and variables. The parties

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acknowledge that the actual project economic viability and technical performance depend on many factors not within the control of Contractor, such as proper design, equipment, construction, operation, maintenance, etc. Therefore, Contractor specifically does not guarantee, warranty or otherwise underwrite the project, its economic viability or its technical performance. Any engineering, design, construction, operation or maintenance deficiencies shall remain the complete responsibility of the party or parties providing the engineering, design, construction, operation and maintenance services for the project. It is understood that Contractor shall have no right of authority to stop any work, nor shall Contractor have any responsibility for the means, methods, techniques or safety programs of the engineer, constructor and/or operator. Contractor's services are provided for IPA and IPSC's sole benefit and not for the benefit of or use by any other party. No third party shall be entitled to rely upon Contractor's work product.

Notwithstanding any other provision to the contrary in this Agreement, Contractor's total aggregate liability to IPA and IPSC's for direct damages suffered by IPA and/or IPSC, individually and jointly, under this Agreement shall be limited to the greater of (i) 100% of the amount of the fees for services received by Contractor under this Agreement, or (ii) for Contractor's liability for which there is insurance coverage explicitly set forth in this Agreement, Contractor's liability shall be limited to the proceeds paid up to the specific limits of any applicable insurance coverage explicitly set forth in this Agreement. In no event shall Contractor, its parent corporation, or its or their affiliates, agents, employees, or others providing materials or performing services in connection with this Agreement be liable for any indirect, incidental, consequential or special loss or damage, including, but not limited to, lost profits, business interruption losses, customer claims, or replacement losses, whether attributable to breach of contract, warranty, express or implied, tort, including negligence, strict liability, or otherwise. Except as herein provided, IPA and IPSC do release, indemnify and hold harmless Contractor, its parent corporation and its and their affiliates, agents, employees, or others providing materials or performing services in connection with this Agreement from and against any and all liability, as well as costs of defense, settlement and

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reasonable attorney's fees, irrespective of fault or negligence, except where such liability arises out of ~~gross negligence~~ or willful misconduct on the part of Contractor or its assignment personnel or both. ~~Gross negligence~~ means any act that was performed with the wanton and reckless indifference and disregard to the harmful consequences on the safety or property of another person or entity. This paragraph shall survive expiration or termination of this Agreement.

14. Independent Contractor: The Contractor shall perform said services as an independent contractor in the pursuit of its independent calling, is not an employee, agent, joint venturer, partner, or other representative of IPA, IPSC or the Operating Agent and shall be under the control of IPSC only to provide the services requested and not as to the means or manner by which the work is to be accomplished. The Contractor has no authority to act for, bind, or legally commit IPA, IPSC, or the Operating Agent in any way.
15. Drug Policy: The Contractor shall submit a current copy of its drug policy for review. Intermountain Power Project facilities are a drug free and zero tolerance workplace. The Contractor and its subcontractors' employees who are to perform work at the IPP site shall participate in a drug testing program prior to arrival, and at any additional time(s) during the Contract as IPSC may request.
16. Security Compliance: The Contractor and its employees, agents, representatives, and/or subcontractors, while performing work or services on IPSC premises, shall fully comply with all fire prevention, security, and safety rules in force at IPSC. The Contractor and its employees, agents, representatives, and/or subcontractors' personnel and vehicles are subject to a random inspection of their person and vehicle upon entering, working on, and departing the plant site.

The Contractor will be directed to specified areas for parking vehicles and equipment by the Contract Administrator. Certain areas of the IPSC plant site are restricted to IPSC vehicles only. Exceptions to the parking restriction will be made on an as needed basis through the Contractor's respective Contract Administrator. The Contractor shall make its employees, agents,

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representatives, and/or subcontractors aware of all areas that are subject to restricted parking.

17. Nonexclusive: This is a nonexclusive Contract. IPSC reserves the right to obtain services from other Contractors.

DIVISION E2

ADDITIONAL GENERAL CONDITIONS

PART E - DIVISION E2ADDITIONAL GENERAL CONDITIONS

1. Payment: Payment will be made within thirty (30) calendar days after completion of each Unit's testing.
2. Invoices: At the expiration of each Unit's testing, the Contractor shall render an invoice. Invoices shall be submitted in duplicate to Accounts Payable, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546.

Each invoice shall show the Contract number. In all cases, the amount of the applicable sales tax or use tax shall be separately stated on the invoice.

3. Regulations, Permits, Licenses, and Warrants: The Contractor shall comply with all applicable federal, state, and local regulations including, but not limited to, Federal and State OSHA, as said regulations relate to this Contract. In addition, the Contractor shall ensure that all permits, licenses, and warrants relating to the Contract be acquired.
4. Letters to IPSC: All inquiries relating to these Specifications prior to award of the Contract shall be addressed to the Buyer.

All letters pertaining to invoices shall be addressed in accordance with Article 2 of this Division.

After award of Contract, all letters pertaining to performance of the Contract shall be addressed as follows:

President and Chief Operations Officer
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624-9546

Attention: Contract Administrator

Regarding Contract No: 02-45563

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DIVISION E2

ADDITIONAL GENERAL CONDITIONS

PART F - DIVISION F1DETAILED SPECIFICATIONS - SPECIAL CONDITIONS

1. Printed Documents: All printed documents including drawings and instruction books, if applicable, shall be in the English language. All units of measurement shall be in the English foot-pound-second system.
2. Indemnity Clause: The Contractor undertakes and agrees to indemnify, hold harmless, and at the option of the Intermountain Power Agency, defend Intermountain Power Agency, Intermountain Power Service Corporation, Los Angeles Department of Water and Power, and any and all of their boards, officers, agents, representatives, employees, assigns and successors in interest from and against any and all suits and causes of action, claims, charges, costs, damages, demands, expenses (including, but not limited to, reasonable attorneys' fees and cost of litigation), judgments, civil fines and penalties, liabilities or losses of any kind or nature, including, but not limited to, violations of regulatory law, death, bodily injury or personal injury to any person, including the Contractor's employees and agents, or damage or destruction to any property of either party hereto, or third persons to the extent arising by reason of or incident to the performance of this Contract on the part of the Contractor, or the Contractor's officers, agents, employees, or subcontractors of any tier, except for the negligence of IPA, IPSC, LADWP, or their boards, officers, agents, representatives, or employees.
3. Insurance Requirements: Prior to the start of work, but not later than thirty (30) days after date of the award of Contract, the Contractor shall furnish IPSC evidence of coverage from insurers acceptable to IPSC and in a form acceptable to the Insurance Analyst for IPSC. Such insurance shall be maintained by the Contractor and at the Contractor's sole cost and expense.

Such insurance shall not limit or qualify the liabilities and obligations of the Contractor assumed under the Contract. IPA, IPSC, or LADWP will not, by reason of its inclusion under these policies, incur liability to the insurance carrier for payment of premium for these policies.

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DIVISION F1

SPECIAL CONDITIONS

Any insurance carried by IPA, IPSC, or LADWP which may be applicable will be deemed to be excess insurance and the Contractor's insurance is primary for all purposes despite any conflicting provision in the Contractor's policies to the contrary.

Should any portion of the required insurance be on a "Claims Made" policy, the Contractor shall, at the policy expiration date following completion of the work, provide evidence that the "Claims Made" policy has been renewed or replaced with the same limits and terms and conditions of the expiring policy, or that an extended discovery period has been purchased on the expiring policy at least for the Contract under which the work was performed.

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DIVISION F1

SPECIAL CONDITIONS

Failure to maintain and provide acceptable evidence of the required insurance for the required period of coverage shall constitute a breach of Contract, upon which the Contract may be terminated or suspended.

a. Workers' Compensation/Employer's Liability:

Workers' Compensation Insurance covering all of the Contractor's employees in accordance with the laws of any state in which the work is to be performed and including Employer's Liability Insurance, and as appropriate, Broad Form All States Endorsement, Voluntary Compensation, Longshoremen's and Harbor Workers' Compensation, Jones Act, and Outer-Continental Shelf coverages. The limit for Employer's Liability coverage shall be \$1 million each accident and shall be a separate policy if not included with Workers' Compensation coverage. Evidence of such insurance shall be an endorsement to the policy providing for a thirty (30) day prior written notice of cancellation or nonrenewal of a continuous policy to IPSC, by receipted delivery, and a Waiver of Subrogation in favor of IPSC, IPA, and LADWP, its officers, agents, and employees. Workers' Compensation/Employer's Liability exposure may be self-insured provided that IPSC is furnished with a copy of the certificate issued by the state authorizing the Contractor to self-insure. The Contractor shall notify IPSC, by receipted delivery, as soon as possible of the state withdrawing authority to self-insure.

b. Commercial General Liability:

Commercial General Liability with Blanket Contractual Liability, Products and Completed Operations, Broad Form Property Damage, Premises and Operations, Independent Contractors, and Personal Injury coverages included. Such insurance shall provide coverage for total limits actually arranged by the Contractor, of \$1 million Combined Single Limit and be specific for this Contract. Umbrella or Excess Liability coverages may be used to supplement primary coverages to meet the required limits. Evidence of such coverages shall be on IPSC's Additional Insured Endorsement Form or on an

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endorsement to the policy acceptable to IPSC and provide for the following:

- (1) To include IPA, IPSC, LADWP, and their officers, agents, and employees as additional insured with the Named Insured for the activities and operations under the Contract to the extent of Contractor's obligations contained herein.

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- (2) That the insurance is primary and not contributing with any other insurance maintained by IPA, IPSC, or LADWP.
 - (4) That the policy shall not be subject to cancellation, change in coverage, reduction of limits or nonrenewal of a continuous policy, except after written notice to IPSC, by receipted delivery, not less than thirty (30) days prior to the effective date thereof.
 - (5) A description of the coverages included under the policy.

c. Commercial Automobile Liability:

Commercial Automobile Liability covering the use of owned, nonowned, hired, and leased vehicles for total limits actually arranged by the Contractor, of \$1 million Combined Single Limit. Such insurance shall include Contractual Liability coverage. The method of providing evidence of insurance and requirements for additional insureds, primary insurance, notice of cancellation, shall be the same as required in the Commercial General Liability Section of these terms and conditions.

d. Professional Liability:

The Contractor shall provide Professional Liability Insurance with Contractual Liability coverage included, covering the Contractor's liability arising from errors and omissions made directly or indirectly during the execution of this Agreement and shall provide coverage of \$1 million, Combined Single Limit. Evidence of such insurance shall be in the form of a special endorsement of insurance and shall include a Waiver of Subrogation against IPA, IPSC, and LADWP, their officers, agents, and employees.

e. Other Conditions:

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- (1) Failure to maintain and provide acceptable evidence of the required insurance for the required period of coverage shall constitute a major breach of Contract, upon which IPSC may immediately terminate or suspend the Agreement, or at its option, procure such insurance and deduct the cost thereof, including an administrative charge of two (2) percent, from any monies due the Contractor, or shall be immediately reimbursed by the Contractor for such costs upon demand.
 - (2) The Contractor shall be responsible for all subcontractors compliance with these insurance requirements.
4. Transportation: All shipments of hazardous materials under this Contract shall be handled in accordance with current U.S. Department of Transportation regulations and other applicable federal, state, and local laws and regulations.
5. Safety: The Contractor agrees it is familiar with the risks of injury associated with the work, has reviewed the work to be performed, inspected the job site with an IPSC representative, and has determined that no unusual or peculiar risk of harm exists with regard to the work to be performed at the job site.

The Contractor further agrees it shall, at all times, provide at the job site a competent supervisor(s) familiar with IPSC's and the industry's safety standards to ensure compliance with all federal, state, and local regulations pertaining to safety, including, but not limited to, Federal and State OSHA, as said regulations relate to the work to be performed under the Contract. Although IPSC assumes no responsibility to oversee or supervise the work, IPSC reserves the right to review safety programs and practices and make recommendations to the Contractor. Any such review or recommendation by IPSC will not increase IPSC's liability or responsibility and shall not relieve the Contractor from providing a safe work environment and complying with legal requirements.

The Contractor shall comply with IPSC's safety and equipment requirements prior to starting work. Worker protective clothing, which includes, but is not limited to, hardhats,

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safety glasses, safety shoes, gloves, respirators, earplugs, safety harnesses, and face shields shall be provided by the Contractor.

Prior to starting work, all of the Contractor's personnel shall attend a safety orientation taught by a representative of IPSC. At the Contractor's option, a supervisor may attend the orientation taught by IPSC, then present the orientation to the remainder of the Contractor's personnel. In this case, a roll shall be given to IPSC which lists each person who received the orientation and the date it was received.

6. Material Safety Data Sheets: The Contractor shall furnish a Material Safety Data Sheet (MSDS) for all hazardous materials furnished under this Contract. The MSDS shall be furnished to IPSC on, or prior to, the date of the first delivery of the materials or equipment.

If the specifications require that the Contractor furnish instruction books, the Material Safety Data Sheets shall also be included in such books.

7. Contract Termination: IPSC reserves the right, by giving twenty (20) days prior written notice to the Contractor, to terminate the whole or any part of this Contract at IPSC's convenience, whether or not the Contractor is in default. In the event of termination, IPA will pay the Contractor reasonable and proper termination costs; however, if the Contractor's Proposal includes cancellation charges, payment for termination costs shall not exceed the cancellation charges set forth therein.

Termination of the work shall not constitute the basis for a claim for damages or loss of anticipated profits and the Contractor hereby releases IPA, IPSC, and LADWP from any such claim.

The Contractor shall, after consultation with IPSC, take all reasonable steps to minimize the costs related to termination.

The Contractor shall provide IPSC with an accounting of costs claimed, including adequate supporting information and documentation and IPSC may, at its expense, audit the claimed costs and supporting information and documentation.

8. Work Product - Any report or other document prepared pursuant to this Agreement shall be for IPSC and IPA's use only. Contractor's prior written consent is required for

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the use of (or reference to) its report or any other document or information prepared pursuant to this Agreement, including use in connection with a public offering of securities or in connection with any other financing, which shall be distributed outside of IPSC and IPA's organization. It is understood and agreed that Contractor's use of its proprietary computer software, methodology, procedures or other proprietary information in connection with an assignment shall not give IPSC and IPA or anyone else any rights with respect to such proprietary computer software, methodology, procedures or other proprietary information, and IPSC and IPA agrees to keep confidential and not disclose such proprietary information to any third parties. Subject to the confidentiality obligations hereunder, Contractor may retain and further use the technical content of its work hereunder. This paragraph shall survive termination or expiration of this Agreement.

The following legal notice shall be affixed to any report or other document furnished by Contractor hereunder and to any report or other document resulting from this Agreement which may be distributed outside IPSC and IPA's organization.

❖LEGAL NOTICE❖

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PART F - DIVISION F2

DETAILED SPECIFICATIONS - DETAILED REQUIREMENTS

3. **General:** This Division contains the detailed requirements for the **Turbine Cycle Performance Testing** as required by IPSC for the Intermountain Generating Station Units 1 and 2.

a. **Plant Description:** INTERMOUNTAIN GENERATING STATION

Two (2) sister 875 MW gross units

IGS Unit 1 commercial 6/86

IGS Unit 2 commercial 5/87

b. **Turbine Design Information:** General Electric S-2, tandem-compound, single reheat with six-flow low-pressure stages. The turbine consists of:

HP Turbine: Newly replaced (U2 - 03/2002, U1 - 03/2003) Alstom single flow, with full arc admission

IP Turbine: Double flow reheat

LP Turbines: Three (3) double flow low-pressure sections with 30-inch last stage buckets

Rated Operating Conditions:

VWO/2400psig/1000F/1000F/6,900 kpph/977 MW gross

Variable back pressure of 1.66" Hga/2.24" Hga/2.99" Hga

Stop Valves (4)

Control Valves (4) full arc admission control

Combine reheat stop and intercept valves (2)

Each SV and RSIV have associated steam strainers

Condensers: Three (3) variable pressure condenser hoods

Feedwater Heaters:

Dual String of Three (3) High-Pressure FW Heaters (8A/8B, 7A/7B, & 6A/6B)

LP FW Heater String (deaerator, 4, 3, 2, 1A/1B/1C, DC)

Pumps/BFPT: Two (2) Boiler Feed Pumps, Two (2) Boiler Feed

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PumpTurbines,

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Three (3) Booster Boiler Feed Pumps, Three (3) Condensate Pumps

2. Standards and Codes: Performance testing shall be done in accordance with the following American Society of Mechanical Engineers (ASME) Performance Test Code (PTC), unless where otherwise stated in these Specifications, as stated in the Test Procedure or as mutually agreed upon.

ASME PTC 6 - 1996 Steam Turbines, alternative test method utilizing the high-pressure primary feedwater flow element.
3. Scope of Work: The Intermountain Power Service Corporation (IPSC) is upgrading plant performance and capacity by replacing the high-pressure (HP) turbine section. Performance testing shall be conducted on the HP Turbine and turbine cycle following the Intermountain Generating Station (IGS) Unit 1 and 2 Major Outages.
 - a. The objective of the HP turbine acceptance testing is to determine the HP turbine efficiency (enthalpy drop test) and HP Wheel Power (electrical load equivalent produced by the HP turbine). This information is required to determine HP Turbine Contract penalties and incentives.
 - b. In addition to testing the HP turbine for acceptance, the performance tests shall be used for benchmarking the performance of other key turbine cycle components. These key components include: the IP turbine (following its outage overhaul), retractable steam packing on HP & IP turbine, boiler feedpump volute acceptance (following outage changeout), and boiler feedpump turbines (detailed performance evaluation).
 - c. All station instrumentation points shall be cross checked and reconciled with third-party instrumentation. High-accuracy instrumentation is critical to establish several key relationships:
 - (1) HP Turbine Bowl Pressure (1st stage pressure tap replacement) to throttle steam flow for turbine controls setup.
 - (2) Final feedwater flow to throttle flow relationship (for controls as well

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as monitoring steam flow for safety valve limitations).

(3) Generator electrical output.

4. Contractor/IPSC Liaison: The Contact between the Contractor and IPSC for coordination, assignment of tasks, exchange of technical information, and interface shall be maintained through the IPSC Contract Administrator.

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The IPSC Contract Administrator for this Contract will also be the "Test Coordinator" and will coordinate testing with IPSC Operations Department and will act as interface with Alstom, the HP turbine supplier.

5. Testing Requirements:

- a. Plant Operation: The IPSC Test Coordinator will coordinate testing with IPSC Operations Department.

The Operations Department will take any action needed to maintain safety and reliability, during the course of a test. The Test Coordinator will immediately advise test personnel of any changes to the operating conditions or plant isolation.

- b. Number and Duration of Tests: The total number of tests in the series is six (6). Each test is to last a minimum of two (2) hours. Stable test conditions must exist for a minimum of one (1) hour prior to the test.

For the HP Turbine testing, two (2) VWO (valves wide-open) performance tests shall be carried out. The tests shall be compared for repeatability. Repeat tests shall be conducted if the results are inconsistent.

TEST SERIES (6):

Full Load Tests	(2)	@ VWO/2400 psig/Load 975 MWg
96% Load Tests	(1)	@ VWO/2300 psig/Load 930 MWg
92% Load Tests	(1)	@ VWO/2200 psig/Load 890 MWg
87% Load Tests	(1)	@ VWO/2100 psig/Load 850 MWg
95% Load Test	(1)	throttled/~2300 psig/Load 925 MWg

- c. Frequency of Readings: Pressure and temperature readings shall be automatically logged at intervals no greater than one (1) minute.

- d. Valve Isolation List: IPSC shall produce a Valve Isolation List to identify the valves requiring closure for the turbine test. These identified valves, shall then be closed or checked by IPSC Operations personnel prior to the test.

To reduce or eliminate unmeasurable leakage rates, drum blowdown, auxiliary steam supply, and sootblowing steam supply shall be isolated for the two (2) hour test period.

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To quantify leakage rates from unknown sources (such as leaking drains and isolation valves), condenser makeup to the hotwell shall be isolated during the test and drop in hotwell monitored and measured to calculate losses. The major leakage sources shall try to be identified with walkdowns measuring downstream temperatures of isolation and drain valves.

Depending upon the magnitude of the cycle leakage (target is less than 0.25 percent) and whether a leakage source can be identified, a test may be rerun with additional valve isolation to determine the impact the leakage has on turbine output and cycle heat rate.

- e. Data Reduction: Test data shall be averaged and corrected for instrumentation calibrations, water legs, zero readings, barometric pressure, and ambient temperature. Steam and water enthalpies shall also be determined and flow rates calculated.

Flow rate is proportional to the square root of the pressure differential across a measuring device. The reduction of differential pressure data should therefore be based on the average of the square root of the readings.

- f. Posting Diagram: Pertinent data from the station computer relevant to the turbine cycle shall be downloaded by IPSC from the Plant Data Acquisition System to an MS Excel spreadsheet. These values shall be averaged for the testing period. Measured values and the station data shall then be posted on a turbine cycle diagram.
- g. Steam Tables: The 1997 ASME steam tables shall be used in the calculation of the test results.
- h. Calculation of Results: Test data shall be evaluated as quickly as possible to determine validity of the test results. This evaluation shall help determine the cause of any problem such as inaccurate or inadequate instrumentation or possibly a test set-up issue.

The performance of the turbine test cycle shall be calculated from the measurement points provided to the turbine cycle test posting diagram.

Performance calculations shall include but not be limited to the

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following:

Turbine Cycle Heat Rate
HP Turbine Efficiency (enthalpy drop test)
HP Wheel Power (electrical load equivalent)
IP Turbine Efficiency (enthalpy drop test)
Retractable Steam Packing on HP & IP Turbine
Boiler Feedpump Performance

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Boiler Feedpump Turbines Performance

IPSC has developed and will be using a computerized heat balance diagram modeled for the turbine cycle using ScienTech's PEPSE software to check all calculations.

- i. Corrections of Test Results for Load and Heat Rate to Specified Conditions:
Since operating conditions cannot be maintained at target values, it is necessary to correct test performance for these deviations using the methods outlined in the ASME PTC 6 Steam Turbine, utilizing the alternative method. This shall ensure comparison of the results of the test on the turbine with the specified performance on the basis of an equivalent cycle.

Group 1 Corrections (for load and heat rate): Final feedwater temperature correction (due to top heater TTD or extraction pipe pressure drop different from specified heat balance).

Extraction Steam to BFPT
Main Steam Desuperheating Spray
Reheat Steam Desuperheating Spray
Condenser - Condensate Subcooling
Condenser Makeup
Water Storage Changes (hotwell, DA, drum, etc.)
Power Factor
Generator Hydrogen Pressure
Generator Voltage

Group 2 Corrections (for load and heat rate):

Throttle Pressure
Throttle Temperature
Hot Reheat Temperature
Reheat Pressure Drop
Turbine Back Pressure

The detailed calculation methods for the various tests are referenced on the calculation sheets in Appendix III of this procedure.

- j. Measurement Uncertainty: Post-test measurement uncertainty analysis shall be calculated utilizing the high-accuracy instrumentation and the station instrumentation available.

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6. Services Provided by IPSC: IPSC will provide test coordination and technical direction.

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- a. Instrumentation Support: IPSC will provide Instrumentation and Control (I&C) Technician support to connect pressure instrumentation to the test point root valves.

IPSC will be responsible for opening the isolation valves going to the test point root valves. IPSC will blow down instrumentation lines prior to the test to verify they are free of obstructions.

IPSC will inspect (and repair if necessary) the installed turbine exhaust basket tips.

IPSC will provide stainless tubing and Swagelock fittings to plumb pressure and differential pressure instrumentation.

Water leg correction heights shall be provided for the pressure test points.

Atmospheric pressure shall be measured using a precision barometer.

IPSC will inspect and clean temperature thermowells with a stainless steel brush to remove rust and any debris.

- b. Maintenance Support: IPSC will inspect and clean the HP feedwater flow nozzle and the main steam desuperheating spray nozzle during the outage.

IPSC will also inspect, clean, and install the BFPT extraction steam flow nozzle spool piece and flow straightener during the outage.

Calibration test reports for the primary feedwater flow nozzle, main steam desuperheating spray nozzle, and the BFPT extraction steam flow nozzle shall be provided.

- c. Electrical Support: IPSC shall provide Electrician support to hook up the electrical power output measurement.

- d. IPSC shall also provide the following:

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- (1) Access to the test areas, which includes scaffolding, moveable platforms, or ladders.
 - (2) Insulation removal and replacement.

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- (3) 110 volt AC power.
 - (4) General lighting for the test areas.
 - (5) Office space.
 - (6) Vehicle parking in designated areas.
7. Services and Equipment Provided by the Contractor: The Contractor shall furnish precision instrumentation, precision test equipment, data acquisition system (DAS), DAS wiring and power cords, materials, instrument calibrations, test equipment calibrations, setup services, data collection and reduction, performance calculations, and all other requirements to perform the Contract in accordance with these Specifications.
- a. The Contractor shall provide personnel specifically trained and experienced in performance testing of steam turbines, for handling and setting up high-precision instrumentation, and for interfacing the instrumentation with a data acquisition system for automated collection.
 - b. The Contractor shall provide calibrated precision instrumentation and test equipment as requested in Attachment II.
 - c. All instrumentation and test equipment shall be hooked into a DAS providing all interface wiring and power cables to allow automated collection of data.
 - d. The Contractor shall provide computerized data reduction and analysis of the test results. The Contractor shall provide the Calculation of Results as outlined in Article 5, paragraph h of this Division, applying correction of the test results to specified conditions.
 - e. The Contractor is encouraged to offer suggestions for improvements in scope of work and test methods that may yield better results.
 - f. Interface: An entrance meeting is required before the start of work to review the scope and test procedures. An IPSC 2-hour Safety Orientation class is required for all Contractor employees to review IPSC Safety Procedures.

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Status meetings on work progress and results shall be held with the Test Coordinator at the beginning of each day and as necessary throughout the test period. Routine interface with the Test Coordinator is crucial. Dialog should include instrumentation and Data Acquisition System status, plus highlighting testing concerns or issues.

An exit meeting and preliminary report shall be given to the Test Coordinator prior to the Contractor leaving the site.

- g. All work shall be performed to the satisfaction of the IPSC Contract Administrator.

- 8. **Test Instrumentation and Equipment Requirements:** A Test Instrumentation and Equipment List of the Contractor provided equipment is attached in Attachment II. The Contractor shall also provide adequate spares of test instrumentation, test equipment, and parts in the event of poor agreement of redundant points, questionable data, or instrument failure.

- a. **Pressure Measurement:** High-precision pressure transducers are to be calibrated to within 0.1 percent accuracy. They may measure either gauge or atmospheric pressure. All measured pressures shall be corrected for static water legs, atmospheric pressure, and instrumentation calibrations.

Several pressure test points may be multiplexed to one precision transducer through the use of a scanning valve, as long as measurements are taken and recorded every minute.

Most high-pressure test measurement points shall be plumbed together to a common test cabinet grouped by physical location.

Multiple pressures measured at different locations, but representing the same condition, shall be averaged together.

- b. **Temperature Measurements:** All temperatures shall be measured using calibrated continuous lead, Type E (chromel constantan) thermocouples (T/Cs), or platinum resistance thermometers (RTDs) located in thermowells. T/Cs or RTDs are to use a cold junction electronic or real ice bath reference.

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High-precision temperature measurements are to be calibrated to within 0.5° F accuracy. Data collection intervals shall be one minute. All measured temperatures shall be corrected for instrumentation calibrations.

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Thermowells are to be brushed out to ensure no rust or residue exists. T/Cs or RTDs shall be spring loaded in the thermowell to ensure they are bottomed out. T/Cs or RTDs shall be packed with insulating sealer, not touching any metal lagging, and immersion depth recorded.

Multiple temperatures measured at different locations, but representing the same condition, shall be averaged together.

- c. Flow Measurements: The differential pressure across the feed water flow nozzles shall be measured by duplicate 0.05 percent calibrated differential pressure transducers. All other subsidiary flowmeters shall be measured by single 0.1 percent calibrated differential pressure transducers.

Data collection intervals for the primary flow measurement shall be one-half minute. Data collection intervals for all other flow measurement shall be one minute. All measured differential pressures shall be corrected for static water legs, atmospheric pressure, and instrumentation calibrations. Multiple flows measured at different locations, but representing the same condition, shall be averaged together.

- d. Electrical Load Measurement: The generator electrical load measurement shall be obtained using three (3) precision watt-hour meters and three calibrated (3) test potential transformers (having an accuracy of 0.25 percent), plus associated readout equipment. Indicating ammeters and voltmeters shall also be provided and connected to the secondary circuits for measurement. As an alternative, a modern, high-precision, digital, three-phase power meter may be used. The station's current transformers shall be used.

Data collection intervals for the electrical load measurement shall be every five minutes. Measurements shall be corrected for test equipment calibrations.

Test electrical measurement equipment shall be installed with the Unit off-line, therefore shall be shipped (in advance) and received the week prior to Unit startup.

- e. Data Acquisition System: All output signals from pressure, temperature, and flow measurements shall be recorded automatically using a computer controlled data acquisition system.

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Measurements shall be taken at the minimum requested time frequencies which are generally once per minute.

- f. Station Instrumentation: IGS station instrumentation shall be utilized where there is no precision test instrumentation or test equipment.

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IGS station instrumentation shall be cross referenced and reconciled with the precision instrumentation points.

9. Calibration of Test Instrumentation:

- a. Third-party Instrumentation Calibrations: High-accuracy pressure and differential pressure instrumentation shall be calibrated, before the tests using standards traceable to National Standards. Recalibration following the test, shall take place if there is questionable data (due to discrepancies between station instrumentation or data that is out of line).
- b. Temperature measurements shall be calibrated before the test and recalibrated after the test to ensure accuracy. Pretest calibration reports shall be submitted on test set-up. Post-test calibration reports shall be submitted within three (3) weeks after the test. Temperature calibrations shall be to a traceable National Bureau standard and include a minimum of five (5) test points at a minimum of two (2) immersion depths.
- c. Electrical test instruments shall be calibrated before and immediately after the turbine test series, against secondary standards traceable to a recognized National Standards Laboratory under laboratory conditions that approximate the expected test site conditions.

10. Reports:

- a. Report Information: The turbine generator test report shall include all relevant items as discussed in this Contract including test results and conclusions, plus information as outlined in the ASME PTC 6, Section 6 - Report of Tests.
- b. Rough Draft: A rough draft test report is due at the time of departure. This is to ensure all tests have good valid measurement points and results. Questionable or invalid data may justify rerunning a test. A preliminary test report is due within two (2) weeks after departure from the job site.

Copies of all pertinent test data, calibrations, and preliminary calculations shall be left at the job site with the Contract Administrator before

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departure from the job site. All testing data shall be supplied in an Excel compatible file format.

- c. Final Report: Three (3) copies of the final report shall be provided to IPSC within four (4) weeks following the tests.

Contractor's Property: The Contractor shall provide IPSC a list of instrumentation, tools, and materials brought onto the job site. A Property Removal Permit shall be required by IPSC whenever Contractor equipment is removed from the job site.

ATTACHMENT I
Labor Rate and Expense Sheet

The bidder shall complete this Labor Rate Sheet listing each category and level of labor likely to be utilized within this Contract. Hourly Rates shall be provided for straight time, overtime, weekends, and holidays for each category of manpower.

Labor Category	Straight Time Rate	Overtime/Weekend Rate

Living Expenses: All costs of residing near the power plant and transportation to and from the plant for purposes of work execution during scheduled work days shall be billed at the rate of \$_____/day. This daily rate shall include, but not be limited to, room, board, phone, ground transportation, laundry, and miscellaneous living expenses. Entertainment expenses shall not be included for reimbursement with living expense receipts.

ATTACHMENT II

Test Instrumentation and Equipment List

Differential Pressure (Flow)		Instrumentation Range	Expected	Accuracy (%)
2 Final Feedwater (in-line flow nozzle)		100	53	0.05
2 BFPT Extraction Steam Flow (2) (in-line flow nozzles)		10	7.5	0.1
1 Main Steam Desuperheating Spray Flow (flow nozzle)		10	0.5	0.1
5 Total Differential Pressure Transducers				
Pressure		Instrumentation Range psig or psia	Expected psig or psia	Accuracy (%)
4 Main Steam/Throttle		3000	2420	0.1
1 Steam Chest Press		3000	2390	0.1
1 Throttle (downstream CV)		3000	2340	0.1
2 Cold Reheat		1000	630	0.1
2 Hot Reheat		1000	585	0.1
3 LP Bowl (crossover)		500	140	0.1
2 Top FW Heater - Extr Inlet (Htr 8A/8B - dual string)		3000	1085	0.1
2 Top FW Heater - Extr Inlet (Htr 7A/7B - dual string)		1000	615	0.1
2 BFPT Steam Inlet		500	140	0.1
2 BFPT Exhaust		5.0" Hga	3.7" Hga	0.1
2 LP Turb Exhaust 1A (basket tips)		5.0" Hga	3.0" Hga	0.1
2 LP Turb Exhaust 1B (basket tips)		5.0" Hga	2.3" Hga	0.1
2 LP Turb Exhaust 1C (basket tips)		5.0" Hga	1.7" Hga	0.1
1 Final Feedwater		3000	2690	0.1
2 BFP Inlet		500	315	0.1
2 BFP Discharge		3000	2990	0.1
32 Total Pressure Transducers				
Temperature		Instrumentation Range °F	Expected °F	Accuracy (%) °F
4 Main Steam/Throttle		1050	1005	0.5 F
4 Cold Reheat		750	660	0.5 F
4 Hot Reheat		1050	1005	0.5 F
3 LP Bowl - Crossover/DA Extr		750	300	0.5 F
2 BFPTs Stm Inlet		750	300	0.5 F
2 Top FW Heater - Extr Inlet (Htr 8A/8B - dual string)		1050	810	0.5 F
2 Top FW Heater - Extr Inlet (Htr 7A/7B - dual string)		1050	800	0.5 F
2 Top FW Heater - Drain Outlet (Htr 8A/8B)		750	490	0.5 F
2 Top FW Heater - Drain Outlet (Htr 7A/7B)		750	410	0.5 F

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2Top FW Heater - Feedwater Inlet (Htr 8A/8B)	750	480	0.5 F
2Top FW Heater - Feedwater Inlet (Htr 7A/7B)	750	400	0.5 F
2Top FW Heater - Feedwater Outlet (Htr 8A/8B)	750	560	0.5 F
2Top FW Heater - Feedwater Outlet (Htr 7A/7B)	750	480	0.5 F
1 Condensate Leaving Condenser	750	120	0.5 F
2 Final Feedwater	750	550	0.5 F

36 Total Temperature Instruments			
	Instrumentation Range	Expected	Accuracy (%)
Electrical Power Measurement	Rating		
3 Potential Transducers	13800/120, 3000 VA, 60 Hz		0.25
3 Precision Watthour Meters	2.5 amp, 120 volt, 60 Hz		0.25
1 Indicating Ammeters			
1 Indicating Voltmeters			
8 Total Electrical Instruments			
OR Digital 3-Phase Power Meter			0.25

Spares: The Contractor shall provide adequate spares of test instrumentation, test equipment, and parts in the event of poor agreement of redundant points, questionable data, or instrument failure.

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